

What is claimed is:

1. A transmission mechanism for an automotive vehicle comprising
 - a housing (21) having a first bearing bracket (211) disposed at the upper portion thereof, a second bearing bracket (212) disposed at the lower portion thereof, a third bearing bracket (213) disposed at the left portion thereof and a fourth bearing bracket (216) disposed at the right portion thereof;
 - a caseless differential mechanism (19) including a right side bevel gear (9), a left side bevel gear (18) and a ring gear (17);
- 10 a driving power input shaft (1) mounted within said first bearing bracket (211) of said housing (21);
 - a first dual tandem gear (2) mounted on said driving power input shaft (1);
 - a second dual tandem gear (5) mounted on said driving power input shaft (1) at middle portion thereof;
- 15 a first sliding gear (7) slidably fixed on said driving power input shaft (1);
 - a rear right wheel output shaft (3) mounted within said third bearing bracket (213);
 - a fourth gear (4) fixed on said rear right wheel output shaft (3) and engaged to said first dual tandem gear (2);
 - a third dual tandem gear (6) mounted on said rear right wheel output shaft (3) and engaged to second dual tandem gear (5) and said first gear (7);
- 20 a core shaft (10) mounted within said sixth bearing bracket (216), on which said caseless differential mechanism (19) is mounted;

a fifth gear (20) connected with said left side bevel gear (18) and engaged to said first dual tandem gear (2);

a sixth gear (8) connected with said right ride bevel gear (9);

a propeller shaft (12) mounted within said second bearing bracket (212);

5 a second sliding gear (16) mounted on a shaft sleeve (121) of said propeller shaft (12);

a third sliding gear (11) fixed to said propeller shaft (12);

a slidable engaging member (13) connected with said propeller shaft (12);

a front left wheel output shaft (14) engaged with said slidable engaging member (13); and

a front right wheel output shaft (15) engaged with said slidable engaging member (13),

10 wherein when said driving power input shaft (1) is driven, said first sliding gear (7) can be regulated to mesh with either said third dual tandem gear (6) or said second dual tandem gear (5), so that the automotive vehicle can obtain different speeds, and wheels at the same side of the automotive vehicle can be driven at the same time.

2. The transmission mechanism of claim 1, wherein said fifth gear is mounted on a left shaft sleeve (181) extended from said left side bevel gear (18), and a sixth gear (8) is provided to be mounted on a right shaft sleeve (91) extended from said right ride bevel gear (9).

3. The transmission mechanism of claim 1, wherein said second dual tandem gear (5) includes a second larger gear (503) and an inner gear (502) disposed at a side surface opposite to said first sliding gear (7) to mesh therewith, and said third dual tandem gear (6) includes a third larger gear (603) and a third smaller gear (601) to mesh with said first sliding gear (7) and said second larger gear (503) of said second dual tandem gear (5), respectively.

4. The transmission mechanism of claim 2, wherein said second dual tandem gear (5) includes a second larger gear (503) and an inner gear (502) disposed at a side surface opposite to said first sliding gear (7) to mesh therewith, and said third dual tandem gear (6) includes a third larger gear (603) and a third smaller gear (601) to mesh with said first sliding gear (7) and said second larger gear (503) of said second dual tandem gear (5), respectively.

5 5. The transmission mechanism of claim 1, wherein said first dual tandem gear (2) includes a first larger gear (203) and a first smaller gear (201) to respectively mesh with said fifth gear (20) and said fourth gear (4).

10 6. The transmission mechanism of claim 2, wherein said first dual tandem gear (2) includes a first larger gear (203) and a first smaller gear (201) to respectively mesh with said fifth gear (20) and said fourth gear (4).

7. The transmission mechanism of claim 3, wherein said first dual tandem gear (2) includes a first larger gear (203) and a first smaller gear (201) to respectively mesh with said fifth gear (20) and said fourth gear (4).

15 8. The transmission mechanism of claim 4, wherein said first dual tandem gear (2) includes a first larger gear (203) and a first smaller gear (201) to respectively mesh with said fifth gear (20) and said fourth gear (4).

9. The transmission mechanism of claim 1, wherein each of said first sliding gear (7) and said 20 slidable engaging member (13) provides a recess (71, 131) at the outer surface thereof for connecting a fork.

10. The transmission mechanism of claim 2, wherein each of said first sliding gear (7) and said slidable engaging member (13) provides a recess (71, 131) at the outer surface thereof for connecting a fork.

11. The transmission mechanism of claim 3, wherein each of said first sliding gear (7) and said slidable engaging member (13) provides a recess (71, 131) at the outer surface thereof for connecting a fork.

12. The transmission mechanism of claim 1, wherein said first sliding gears (7) is splined to
5 said driving power input shaft (1).

13. The transmission mechanism of claim 2, wherein said first sliding gears (7) is splined to said driving power input shaft (1).

14. The transmission mechanism of claim 3, wherein said first sliding gears (7) is splined to said driving power input shaft (1).

10 15. The transmission mechanism of claim 5, wherein said first sliding gears (7) is splined to said driving power input shaft (1).

16. The transmission mechanism of claim 2, wherein said front left wheel output shaft (14) is mounted within said front right wheel output shaft (15).

15 17. The transmission mechanism of claim 3, wherein said front left wheel output shaft (14) is mounted within said front right wheel output shaft (15).

18. The transmission mechanism of claim 5, wherein said front left wheel output shaft (14) is mounted within said front right wheel output shaft (15).

19. The transmission mechanism of claim 9, wherein said front left wheel output shaft (14) is mounted within said front right wheel output shaft (15).

20 20. The transmission mechanism of claim 12, wherein said front left wheel output shaft (14) is mounted within said front right wheel output shaft (15).